Tempe Fire Department Policies and Procedures
Hazardous Materials
208.01
Rev 6-10-91

This plan provides a basic philosophy and strategic plan for hazardous materials situations. All Tempe Fire Department policies and procedures, unless superseded by a specific part of this plan, remain in effect for hazardous materials incidents.

Hazardous materials incidents encompass a wide variety of situations including fires, spills, transportation accidents, chemical reactions, explosions, and similar events. Hazards involved may include toxicity, flammability, radioactivity, corrosives, explosives, health hazards, chemical reactions, and combinations of factors. This plan provides a general framework for handling a hazardous materials incident, but does not address the specific tactics or control measures for particular incidents.

Every incident presents the potential for exposure to hazardous materials and the products of combustion of an ordinary fire may present severe hazards to personnel safety.

Adequate situation evaluation is critical. If the wrong decision is made, personnel can easily become part of the problem instead of part of the solution. Any emergency response effort must favorably change or influence the outcome. If the outcome cannot be favorably changed, personnel must withdraw, evacuate endangered civilians, and protect exposures if possible.

This procedure is specifically applicable to known hazardous materials incidents, but it does not reduce the need for appropriate safety precautions at every incident. The use of full protective clothing and SCBA whenever appropriate and the utilization of all Tempe Fire Department policies and procedures on a continuing basis is the starting point for this plan.

ALARM

Alarm will attempt to obtain any and all information from the person reporting a hazardous materials incident. The information should, if possible, include material name and/or type, amount and size of container(s), problem (leak, spill, fire, etc.), and dangerous properties of the materials. The incident taker should stay on the telephone with the caller to gain additional information after giving the call to the dispatcher.

Any additional information shall be relayed to responding units after dispatch.

If the call comes from a person with particular knowledge of the hazardous situation, that person should be instructed to meet and direct the arriving units. Alarm will relay that person's location to responding units.

Alarm will dispatch the appropriate hazardous materials assignment companies to all reported hazardous materials incidents.

Alarm will obtain the prevailing wind speed and direction from the Airport Tower and advise responding units.

FIRST ARRIVING UNIT

The first arriving officer will establish Command and begin a size-up. The first unit must consciously avoid committing itself to a dangerous situation. When approaching, slow down or stop to assess any visible activity taking place. Evaluate effects of wind, topography, and location of the situation.

Command will establish level II staging for other responding units. Staged companies must be in a safe location, taking into account wind, spill flow, explosion potential, and similar factors in any situation. The DOT guidebook,

NFPA reference materials for MSDSs available to them should be used to establish a safe distance for staging. Units must stage in a safe location taking into account wind, spill flow, explosion potential, and similar factors in any situation.

SIZE-UP

Command must make a careful size-up before deciding on a commitment. It may be necessary to take immediate action to make a rescue or evacuate an area, but this should be done with an awareness of the risk to Fire Department personnel and taking advantage of available protective equipment.

The objective of the size-up is to identify the nature and severity of the immediate problem and gather sufficient information to formulate a valid action plan. A hazardous materials incident requires a cautious and deliberate size-up.

Command must avoid premature commitment of companies and personnel to potentially hazardous locations. Proceed with caution in evaluating risks before formulating a plan and keep uncommitted companies at a safe distance. In many cases, evaluation by Hazardous Incident Response Team members before committing is the safest approach.

Command must identify a hazardous area based on potential danger, taking into account materials involved, time of day, wind and weather conditions, location of the incident, and degree of risk to unprotected personnel. Take immediate action to evacuate and/or rescue persons in critical danger if possible, providing for the safety of rescuers first.

The major problem in most cases is to identify the type of materials involved in a situation and the hazards presented before formulating a plan of action. Look for labels, markers, DOT identification numbers, NFPA diamond, and shipping papers, refer to pre-fire plans and ask personnel at the scene (plant management, responsible party, truck drivers, fire department specialist). Utilize reference materials carried on apparatus and have Alarm contact other sources for assistance in sizing-up the problem (Chemtrec, other agencies, fire department specialists, manufacturers of materials, etc.). Refer to the Tempe Fire Department Hazardous Materials Reference List, located in Battalion-7, C-73, E-72, EP-76, HM-72, and Alarm.

ACTION PLAN

Based on the initial size-up and any information available, Command will formulate an action plan to deal with the situation.

Most hazardous materials are intended to be maintained in a safe condition for handling and use through confinement in a container or protective system. The emergency is usually related to the material escaping from the protective container or system and creating a hazard on the exterior. The strategic plan must include a method to control the flow or release, get the hazardous material back into a safe container, neutralize it, allow it to dissipate safely, or coordinate proper disposal.

The specific action plan must identify the method of hazard control and identify the resources available and/or required to accomplish this goal. It may be necessary to select one method over another due to the unavailability of a particular resource or to adopt a "holding action" to wait for needed expertise, equipment, or supplies.

As a general policy, the Hazardous Incident Response Team will be assigned to any situation involving direct contact with hazardous materials.

At all incidents involving hazardous materials, a Safety Sector will be established. The Safety Sector will monitor all activities to ensure that procedures are conducted in a safe manner. The Safety Sector will intervene and stop any operation that is being performed in an unsafe manner. Upon intervening into any operation, the Safety Sector will advise Command of the situation.

The action plan must provide for:

- An assigned Safety Sector officer.
- Safety of citizens.
- Safety of firefighters.
- Evacuation of endangered area if necessary, or sheltering in place if practical.
- Control of situation.
- Stabilization of hazardous materials, and or disposal or removal of hazardous material.

Avoid committing personnel and equipment prematurely or "experimenting" with techniques and tactics. Many times it is necessary to evacuate and wait for special equipment or specialty help.

CONTROL OF HAZARDOUS AREA

A hazardous materials incident has three zones associated with the scene. There is the Hot Zone, Warm Zone, and the Cold Zone.

Hot Zone

The Hot Zone is the area in which personnel are potentially in immediate danger from the hazardous condition. This is established by Command and controlled by the Fire Department. Access to this area will be rigidly controlled and only personnel with proper protective equipment and an assigned activity will enter. All companies will remain intact in designated staging areas until assigned. Personnel will be assigned to monitor entry and exit of all personnel from the Hot Zone. The Hot Zone should be geographically described to all responding units and identified with hazard tape, if possible. (A Lobby Control Sector may be established to control access to the Hot Zone and maintain an awareness of which personnel are working in the area.)

Responsibility for control of personnel in this zone includes not only Fire Department personnel, but any others who may wish to enter the Hot Zone (police, press, employees, tow truck drivers, ambulance personnel, etc.). COMMAND IS RESPONSIBLE FOR EVERYONE'S SAFETY.

Warm Zone

The Warm Zone is the larger area surrounding the Hot Zone in which a lesser degree of risk to personnel exists. All civilians would be removed from this area. The limits of this zone will be enforced by the Police Department based on distances and directions established in consultation with Command. The area to be evacuated depends on the nature and amount of the material and type of risk it presents to unprotected personnel (toxic, explosive, etc.). In the Warm Zone certain activities may take place, such as contamination reduction, site survey, etc. All personnel in the Warm Zone will wear appropriate level of personal protective equipment for the hazards present.

In some cases, it is necessary to completely evacuate a radius around a site for a certain distance (i.e., potential explosion).

In other cases, it may be advisable to evacuate a path downwind where toxic or flammable vapors may be carried (and control ignition sources in case of flammable vapors).

NOTE: When toxic or irritant vapors are being carried downwind, it may be most effective to keep everyone indoors with windows and doors closed (sheltering in place) to prevent contact with the material instead of evacuating the area. In these cases, companies would be assigned to patrol the area assisting citizens in shutting down ventilation systems and evacuating persons with susceptibility to respiratory problems.

Cold Zone

The Cold Zone is the area outside of the limits of the Warm Zone. All other incident activities, including Command, should be located in the Cold Zone. All non-essential personnel, staged companies, and the public should be in the Cold Zone.

USE OF NON-FIRE DEPARTMENT PERSONNEL

In some cases, it may be advantageous to use non-Fire Department personnel to evaluate hazards and perform certain functions for which they would have particular experience or ability.

When such personnel are outfitted with breathing apparatus, chemical suits, etc., they must be made aware of the functions, limitations, and safety precautions necessary in their use. Fire Department personnel with the necessary protective equipment must closely monitor and/or accompany such personnel for safety.

Command is responsible for the safety of all personnel involved in any incident and all incident management decisions.

SPECIAL CONSIDERATIONS

General Factors to Consider

Due to the wide variety of situations Fire Department personnel may encounter in dealing with hazardous materials, these considerations will not attempt to provide specific guidelines on any one individual chemical or situation and are not listed in any priority.

It is imperative that the first arriving Fire Department unit determine what hazardous material(s) is involved and how much prior to taking action to stabilize the incident.

Call for additional resources.

Entering the scene to make positive identification may be a considerable risk. The danger of explosions, leaking gas, and poisoning may be great.

Action taken prior to determining the product involved may be totally wrong and may severely compound the problem.

Transportation emergencies are often more difficult than those at fixed locations. The materials involved may be unknown, warning signs may not be visible, or obscured by smoke and debris, the driver may be killed or missing. Department of Transportation hazardous materials marking systems are inadequate because some hazardous materials in quantities up to 1000 lbs. do not require a placard. There may be combinations of different hazard classifications involved with only a "dangerous" placard showing.

The DOT placarding system only identifies a primary hazard classification for most hazardous materials. All hazardous materials have secondary hazards which are generally not indicated by placards.

At the termination of an incident, ensure that all of the necessary information is collected for use during a critique of the incident. As soon as practical, a critique of every hazardous materials incident will be scheduled and conducted in accordance with federal OSHA regulation 29 CFR 1910.120.

The following items may be significant to consider at any hazardous materials incident. (Not all will be significant at any particular incident.)

Cooling Containers

a. Obtain adequate water supply, use large GPM hose streams or stang guns.
b. Apply heavy streams to vapor space are above the tank's liquid line.
c. Use unmanned streams.
d. Use natural barriers to protect personnel.

Remove Uninvolved Materials

a. These actions should only be done after a complete site safety plan has been established by Command in conjunction with HIRT officers.
b. Move individual containers.
c. Move tank cars away from flame.
d. Cool containers before moving.

Stop the Leak

a. Use water spray to approach leak.
b. Close valves when safe to do so.
c. Do not apply water to chlorine containers - it will make the leak worse.

Apply Diluting Spray or Neutralizing Agent, As Appropriate

a. Dilute water-soluble liquids such as ammonia, chlorine, LPG (no water on chlorine tanks).
b. Use water with caution on some materials.

Construct Dams, Dikes, or Channels

a. Direct running liquid away from exposures.
b. Control run-off from corrosive or toxic materials.
c. Use sand or dirt.
d. Keep product out of sewer, storm systems, canals, or other waterways.

Remove Ignition Sources

a. Start downwind.
b. Eliminate all sources of heat, spark, friction.
c. These actions need to be accomplished in conjunction with the proper technical advice.

Call for additional resources when their need is only anticipated. The actions taken by the fireground commander in the first few minutes of an incident affects the outcome more than any other single factor.

Alarm has the Tempe Fire Department Hazardous Materials Reference List of personnel and organizations which may be helpful during a hazardous materials emergency.

These include:

1. Fire Department personnel with particular experience or knowledge.

2. State of Arizona Department of Environmental Quality Emergency Response Unit.

3. Authorities in charge of landfills and dumps where hazardous materials may be disposed.

4. Commercial chemical experts with experience in handling and disposing of most common chemicals.

5. Pesticide consultants and disposal teams with equipment to clean-up agricultural chemical

spills.

6. State of Arizona Department of Public Safety, Commercial Vehicle Safety Specialists (CVSS) for transportation incidents.

7. Railroad information numbers.

8. Tank truck companies with defueling capability (in case carrier involved in incident has none).

9. Radioactivity and military weapons emergency contacts.

10. Arizona State University chemical experts who can provide advice and information.